

REMARKS/ARGUMENTS

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested.

Claims 1 and 3-6 remain pending.

Claim 5 was objected to because it was unclear. Claim 5 has been amended above responsive to the Examiner's rejection so that it now specifies that the succession of straight tube sections direct a descending mass flow of dense phase particles into a plane that is orthogonal to the ascending gaseous flow. It is believed that claim 5 is now clear and in proper form. It is therefore respectfully requested that the objection be withdrawn.

Claim 1 was rejected under 35 USC 102(b) as being anticipated by Kaulakis. Applicant respectfully traverses this rejection.

Anticipation under Section 102 of the Patent Act requires that a prior art reference disclose every claim element of the claimed invention. See, e.g., Orthokinetics, Inc. v. Safety Travel Chairs, Inc., 806 F.2d 1565, 1574 (Fed. Cir. 1986). While other references may be used to interpret an allegedly anticipating reference, anticipation must be found in a single reference. See, e.g., Studiengesellschaft Kohle, G.m.b.H. v. Dart Indus., Inc., 726 F.2d 724, 726-27 (Fed. Cir. 1984). The absence of any element of the claim from the cited reference negates anticipation. See, e.g., Structural Rubber Prods. Co. v. Park Rubber Co., 749 F.2d 707, 715 (Fed. Cir. 1984). Anticipation is not shown even if the differences between the claims and the prior art reference are insubstantial and the missing elements could be supplied by the knowledge of one skilled in the art. See, e.g., Structural Rubber Prods., 749 F.2d at 716-17.

Claim 1 provides that the cyclone separator leg terminates distally in a radius-curved single leg termination devoid of movable sealing parts. The Examiner has

referenced column 3 of Kaulakis as allegedly teaching that each of the depicted cyclones of Kaulakis may comprise more than one cyclone separator with dip legs which converge into a single column dip leg. Even if two or more such cyclone separators are provided for either or both cyclones 36,54 of Kaulakis, it is respectfully submitted that Kaulakis would still not anticipate the invention because Kaulakis discloses that each of his dip legs terminate with a vertical riser. Although each dip leg includes a curved portion 40,58, contrary to the invention recited in claim 1, that curved portion is not the distal termination of the respective leg. Rather, the leg terminates distally at the open upper end of the respective riser. Thus, Kaulakis does not anticipate claim 1.

It is further respectfully submitted that claim 1 is not obvious from Kaulakis because Kaulakis necessarily includes the riser distal portion. Indeed, in accordance with Kaulakis' teachings, the vertical riser is required in order to control the rate of flow and density of the solid mixture to ensure flow of the catalyst particles into the dense bed.

In view of the foregoing, reconsideration and withdrawal of the Examiner's rejection based on Kaulakis is solicited.

Claim 1 was also rejected under 35 USC 102(b) as being anticipated by Jones. Applicant respectfully traverses this rejection.

It is acknowledged in the specification, for example at page 6, lines 5-9, that the joining of the legs of a primary cyclone and a secondary cyclone such that the solid materials collected by both cyclones is discharged by means of a single valve at the end of the combined section of the cyclone, is a known technique. However, in this respect, the claimed invention must be considered as a whole and thus the novelty of the invention derives in particular from the elimination of a mechanical closure and the provision in its stead of a separator leg termination that is radius-curved, immersed in the fluidized bed, and devoid of moving parts. It is respectfully submitted that such a combination is not anticipated by any of the prior art of record.

The Examiner cites column 1, lines 32-48 of Jones as allegedly teaching multiple cyclones discharging solids into a common dip-leg. It is respectfully noted that the cited passage in Jones is a general description of the prior art; Jones does not illustrate or disclose such a joinder having a single leg termination that is radiused. As such, it is respectfully submitted that Jones does not teach or suggest the combination claimed. The fact that Jones acknowledges that there are prior art installations where cyclones in multiple discharge solids to a common dip leg does not mean *ipso facto* that Jones is advocating the provision of a radius curve at the termination of a separator leg which joins two dip legs. On the contrary, there appears to be two discrete teachings in Jones and no teaching of the combination advanced by the Examiner. Thus, Jones may teach that there are known installations where plural cyclones discharge into a common dip leg, but it is in an entirely separate context that Jones discloses a curved dip leg end having a mechanical closure that is selectively released.

Thus, Jones does not anticipate the combination claimed because Jones does not teach, in combination, a separator leg joining a leg of the secondary cyclone and the leg of a primary cyclone and wherein the separator leg terminates in a radius-curved separator leg termination. Furthermore, Jones does not teach such a combination devoid of movable sealing parts. Quite the contrary, Jones' invention specifically provides for a mechanical closure on the dip leg that is selectively released and, thus, expressly teaches a movable sealing part.

The Examiner asserts that Jones' sealing plate is only present when catalyst is introduced and is only temporary and will be removed during operation by the presence of a weight to pull a metal plate out of position or by forming the sealing means from a material that will partly or wholly fuse or rupture or disintegrate. However, the Examiner has by this admission acknowledged that Jones does teach a mechanical sealing part for the distal end of his dip leg and does teach that at least a part of the mechanical closure is movable. As such, Jones does not anticipate a distal termination that is devoid of movable sealing parts. Jones invention expressly provides for a

mechanical closure placed on the dip leg and, thus, the invention is not anticipated. Indeed, it would be contrary to Jones invention to provide no sealing part. Therefore, claim 1 is not anticipated by nor obvious from Jones.

Claim 3 was rejected under 35 USC 103 as unpatentable over Jones in view of Danielsen. Applicant respectfully traverses this rejection.

Claim 3 is submitted to be patentable over Jones for the reasons advanced above. The Examiner's further reliance on Danielsen does not overcome the deficiencies of Jones noted above. In fact, Danielsen also teaches away from the invention by providing a movable sealing part at the distal end of the leg structure. It is therefore respectfully submitted that claim 3 is also allowable over the prior art of record.

Claims 4 and 5 were rejected under 35 USC 103 as unpatentable over Jones in view of Luckenbach. Applicant respectfully traverses this rejection.

These claims are submitted to be patentable over Jones for the reasons advanced above. The Examiner's further reliance on Luckenbach does not overcome the deficiencies of Jones noted above. In fact, Luckenbach also teaches away from the claimed invention because Luckenbach discloses movable sealing parts in direct contradiction to the combination claimed in applicant's claim 1 and the claims dependent therefrom. It is therefore respectfully submitted that claims 4 and 5 are also patentable over the prior art of record.

It is further respectfully submitted that Lukenbach does not teach or suggest that the radius curved portion of Jones could or should be formed from a plurality of straight pipe sections. In the case of Lukenbach, a single pipe part 14 is provided at an incline. Lukenbach does not teach that his inclined part is formed from a series of straight pipe sections; only a single pipe section is shown forming this component. Likewise, Lukenbach provides no teaching or suggest whatsoever regarding using

straight pipe sections to form a radius curve. In fact, if Lukenbach's teachings were followed in Jones, then Jones would provide a single straight segment at an incline as depicted in Lukenbach, rather than the single curved pipe Jones discloses. It is therefore, respectfully submitted that any proper combination of Jones and Lukenbach would still not anticipate nor render obvious the plural straight portions applicant claims in claims 4 and 5.

It is further respectfully noted that claim 5 provides that the succession of straight tube sections directs the mass flow against phase particles into a plane orthogonal to the ascending gas flow. This is not true of Jones as Jones clearly directs mass flow at an acute angle to and in the same direction as the gas flow, as understood from Figure 2. Thus, Jones does not teach or suggest a curve directing mass flow in a plane orthogonal to the gas flow direction. Lukenbach also fails to teach or suggest directing flow in a direction orthogonal to the gas flow because Lukenbach teaches mass flow directed downwardly at an acute angle to and in the opposite direction from the gas flow. Thus, any proper combination of Jones and Luckenbach does not anticipate nor render obvious claim 5 either.

Claim 6 was rejected under 35 USC 103(a) as unpatentable over Jones. Applicant respectfully but strongly traverses the Examiner's rejection in this regard.

The Examiner's suggestion that Jones is "silent" as to the vertical distance between the junction and the discharge end is not well taken. Jones is not just silent, but provides no teaching or suggestion whatsoever in this regard, in part because Jones provides no teaching relevant to a configuration of cyclones in multiple.

Indeed, as noted above, Jones does not teach or suggest that his dip leg terminal end is properly adapted to cyclones in multiple. Rather, the reference to cyclones in multiple is just a general reference to one type of known cyclone assembly. Even if Jones' removable closure plate and curved tip were applied to such a common dip leg, Jones provides no teaching whatsoever as to the position of the junction of the

primacy and secondary legs relative to the radius-curved termination. The Examiner's conclusion that it would inherently lie on the side opposite the junction of the primary and secondary cyclone dip legs is pure conjecture on the Examiner's part. In this regard, it is noted that claim 1 provides that the lower end of the leg of the secondary cyclone (22 in the disclosed example embodiment) joins the leg of the primary cyclone (21). In Jones cyclone 13 is the secondary cyclone and it terminates in the plate 19 sealed curved end 20. If the secondary cyclone leg 16 of Jones were joined to the primary cyclone leg 11, there would be no curved end at all or, if one was provided, it may well be directed towards the center line of the fluidized bed and, thus, would be on the same side of the combined leg as the juncture of the second cyclone leg and the first cyclone leg. Therefore, the Examiner's statement that the curved tip would inherently lie on the opposite side from the junction is not supported by the cited reference and is pure conjecture.

The Examiner's suggestion that the location of the junction would be an obvious matter of design choice is without any basis whatsoever in the record. Indeed, the Examiner has cited no teachings of multiple cyclone junctions other than the general references thereto in the primary references and, thus, has cited no teaching relevant to the factors considered by a skilled artisan in deciding where such a junction should be provided. Applicants have specified a particular relationship between the junction and the outlet related to the diameter of the dip leg, which is nowhere anticipated nor suggested by the record prior art. In the absence of a motivation to modify the primary reference to produce the invention claimed, the invention can not be properly said to have been obvious.

It is clear that the initial burden of establishing a basis for denying patentability to a claimed invention rests upon the Examiner. In re Piasecki, 745 F. 2d 1468, 223 USPQ 785 (Fed. Cir. 1984). In establishing a *prima facie* case of obviousness under 35 U.S.C. § 103, it is incumbent upon the Examiner to provide a reason why one of ordinary skill in the art would have been led to arrive at the claimed invention from the

prior art. Ex parte Clapp, 227 USPQ 972 (BPAI 1985). To this end, the requisite motivation must stem from some teaching, suggestion or inference in the prior art as a whole or from the knowledge generally available to one of ordinary skill in the art and not from applicant's disclosure. See, for example, Uniroyal, Inc. v. Rudkin-Wiley Corp. 837 F.2d 1044, 7 USPQ 2d 1434 (Fed. Cir. 1988).

Rejections based on 35 USC §103 must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. The Examiner has initial duty of supplying the factual basis for the rejection. The Examiner may not resort to speculation, unfounded assumption or hindsight reconstruction to supply deficiencies in the factual basis. See In re Wanery, 379 F.2d 1011, 1017, 154 USPQ 173, 177-78 (CCPA 1967).

All objections and rejections having been addressed, it is respectfully submitted that the present application is in condition for allowance and an early Notice to that effect is earnestly solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: 

Michelle N. Lester
Reg. No. 32,331

MNL:slj
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100